

ABSTRACT

A process is provided for converting an alkane to an oxygenated product by passing an alkane gas over a first fixed bed containing a higher valence bromide salt to produce an alkyl bromide, a hydrobromic acid, and a lower valence bromide salt.

5 The alkyl bromide and hydrobromic acid are conveyed as a gas to a second fixed bed containing a metal oxide and are passed over the second fixed bed to produce the first bromide salt and the oxygenated product. The metal oxide in the second fixed bed is regenerated by passing oxygen over the second fixed bed producing the metal oxide and bromine. The bromine is conveyed as a gas from the second fixed bed to the first
10 fixed bed. The first bromide salt of the first fixed bed is regenerated by passing the bromine over the first fixed bed producing the first bromide salt.